Program for the 29th Annual Climate Diagnostics & Prediction Workshop

Monday, October 18, 2004

7:30 – 8:15 Registration
8:15 – 8:45 Welcome & Opening Remarks

Climate Prediction Center (CPC)
James D. Laver, *Director, CPC*

University of Wisconsin
John A. Young, *Professor*

National Oceanic and Atmospheric Administration
D. L. Johnson, *Director, National Weather Service*
Louis Uccellini, *Director, National Centers for Environmental Prediction*
Chester Koblinsky, *Director, NOAA Climate Office;*
Acting Director, NOAA's Office of Global Programs

SESSION 1: Recent Climate Anomalies & MJO
Chair: Vern Kousky (5 min. topic introduction)

8:45- 9:15 An overview of recent Climate anomalies
Gerry Bell

9:15-10:30 POSTER SESSION 1: RECENT CLIMATE ANOMALIES, CLIMATE FORECAST SYSTEM & PREDICTIBILITY

SESSION 2: PREDICTABILITY
Chair: J. Young (5 min. topic introduction)

10:35-11:05 Potential Predictability of Drought and Pluvial Conditions Over the Central United States on Interannual to Decadal Time Scales
Siegfreid Schubert, M. Suarez, P. Pegion, R. Koster and J. Bacmeister

11:05-11:35 Practical prediction skill and theoretical predictability in the Coupled Forecast System
Huug van den Dool and S. Saha

11:35-12:05 Storm track predictability on seasonal to decadal scales
Gilbert Compo and P. Sardeshmukh

12:05-1:30 LUNCH

SESSION 2: PREDICTABILITY (continued)
Chair: John Young

1:35-2:05 Atmospheric response to the changes of ocean circulation
Lixin Wu and Z. Liu

2:05-2:35 Global occurrences of extreme precipitation and MJO: Observations and predictability
Charles Jones, D. Waliser, W.Stern

2:35-3:05 BREAK

SESSION 3: THE NEW NCEP CLIMATE FORECAST SYSTEM (CFS)
Chair: Hua-Lu Pan (5 min. topic introduction)

3:05-3:35 Validation of the NCEP global coupled ocean-atmosphere model (CFS)
Suranjana Saha

3:35-4:05 The forecast skill and predictability of DJF seasonal climate as seen from the NCEP CFS 24-year hindcasts
Peitao Peng, Q. Zhang, A. Kumar, H. van den Dool, W. Wang and S. Saha

4:05-4:35 Dynamical forecasts of atmospheric conditions associated with North Atlantic hurricane activity by the Coupled Forecast System at NCEP
Muthuvel Chelliah and S. Saha

4:35-5:05 An analysis of ocean retrospective forecasts from the new NCEP Global Forecast System
Sudhir Nadiga, J. Wang and D. Behringer

5:05-5:35 The NCEP operational Climate Forecast System: configuration, product, and plan for the future
Hua-Lu Pan

5:35-7:30 ---------- **ICE BREAKER** ----------

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SESSION 4: CLIMATE APPLICATIONS OF SATELLITE INFORMATION
Chair: Phil Arkin (5 min. topic introduction)

8:05-8:35 Using 22 years of HIRS observations to infer global cloud cover
Paul Menzel, D. Wylie, D. Jackson and J. Bates

8:35-9:05 Operational climate monitoring from space: the Satellite Application Facility on Climate Monitoring (CM-SAF)
Jörg Schulz and the CM-SAF partners

9:05-10:30 POSTER SESSION 2: SATELLITE REGIONAL & LONG-TERM CLIMATE STUDIES

10:30-11:00 The diurnal cycle of precipitation over the Americas based on CMORPH
Vern Kousky, J. Janowiak and R. Joyce

11:00-11:30 Satellite thermal emission spectra can provide a key record for monitoring and diagnosing climate
Henry Revercomb, J. Anderson, J. Rice, D. Tobin, R. Knuteson and F. Best

11:30-1:00 LUNCH

SESSION 5: VARIABILITY IN THE CENTRAL UNITED STATES
Chair: Zhengyu Liu (5 min. topic introduction)

1:05-1:35 Impact of precipitation observations on regional climate simulations
Anna Nunes, J. Roads, M. Kanamitsu and P. Arkin

1:35-2:05 Warm season rainfall variability over the U.S. Great Plains in observations, NCEP and ERA-40 reanalyses and NCAR and NASA AMIP simulations: intercomparisons for NAME
Ruiz-Barradas and S. Nigam

2:05-2:35 Diagnosing the effect of ENSO and PDO teleconnections on North America summer climate with the Regional Atmospheric Modeling System (RAMS)
Christopher Castro and R. Pielke

2:35-3:05 Regional climate simulations of summer precipitation over the U.S. and Mexico
Kingtse Mo, J. Schemm, Y. Song and W. Higgins

3:05-3:30 BREAK

SESSION 6: LONG-TERM VARIATIONS
Chair: Cecile Penland (5 min. topic introduction)

3:35-4:05 Simulated and observed pre-industrial to modern vegetation and climate changes
M. Notaro, Z. Liu, R. Gallimore, S. Vavrus and J. Kutzbach

4:05-4:35 Long-term trend of global land precipitation: uncertainties in gauge-based analyses
Mingyue Chen, P. Xie, J. Janowiak and P. Arkin

4:35-5:05 Variability and forcing of anomalous Western Hemisphere warm pools
David Enfield, S. Lee and C. Wang

5:05-5:35 Precipitation extremes during 1895-2003 in the continental United States
Ken Kunkel

Wednesday, October 20, 2004

SESSION 7: RESULTS FROM NAME 04 (North American Monsoon Experiment)
Chair: Kingtse Mo (5 min. topic introduction)

8:05-8:35 An Update on the North American Monsoon Experiment (NAME)
Wayne Higgins, Marco Carrera, Tim Eichler and the NAME SWG

8:35-9:05 Preliminary results of the NCAR ISS deployment in NAME
Richard Johnson and P. Ciesielski

9:05-10:30 POSTER SESSION 3: NAME, SOIL MOISTURE & REGIONAL

10:30-11:00 Topographic dependency of rainfall characteristics from the Sierra Madre Occidental in Northwest Mexico
Dave Gochis, A. Jimenez, C. Watts, J. Garatuza-Payan and J. Shuttleworth

11:00-11:30 Evaluating sources of monsoon surface moisture in southeast Arizona
Art Douglas and N. Novella

11:30-1:00 LUNCH

SPECIAL SESSION ON CPC (details to be determined)
Chair: Louis Uccellini or Jim Laver (5-10 minute introduction)

1:10-1:30 Events leading to formation of a "Diagnostics Climate Center"
Bob Reeves
1:30-1:50 The formation of the Climate Analysis Center (CAC)
Jay Winston, 1st CAC Director
1:50-2:10 Monitoring and diagnostics at the CAC
Gene Rasmusson, 1st Diagnostics Branch chief
2:10-2:30 Early challenges at the CAC
Jim Rasmussen, 2nd CAC Director
2:30-2:50 Climate predictions and their integration into CAC
Don Gilman, 1st Prediction Branch chief

2:50-3:20 BREAK

3:20-3:40 Expansion of the CAC Role
Dave Rodenhuis, 3rd CAC Director
3:40-4:00 Research partnerships
Rick Rosen, NOAA's Office of Atmospheric Research
4:00-4:20 A move toward climate model forecasts

Ants Leetmaa, 4th CPC Director
4:20-4:40 Challenges and the future of CPC
Jim Laver, 5th (and current) Director of CPC

6:00-9:00 WORKSHOP BANQUET

Thursday, October 21, 2004

SESSION 8: FORECAST METHODS AND ASSESSMENTS
Chair: Bob Livezey (5 min. topic introduction)

8:05-8:35 Downscaling week-two ensembles using forecast analogs
Jeff Whitaker and T. Hamill

8:35-9:05 Exploring the subseasonal weather-climate connection
Klaus Weickmann and E. Berry

9:05-9:35 New NWS Western Region local climate products
Marina Timofeyeva, A. Bair and D. Unger

9:35-11:00 POSTER SESSION 4: ENSO, TELECONNECTIONS, FORECASTS

11:00-11:30 How much skill was there in forecasting ENSO in 2002-2004?
Chris Landsea and J. Knaff

11:30-12:00 Diagnosis of skill variability as a basis for discriminating use of CPC long-lead seasonal forecasts
Bob Livezey and M. Timofeyeva

12:00-12:30 Regional verification of CPC's seasonal forecasts
Mike Halpert and K. Pelman

12:30-2:00 LUNCH

SESSION 9: ENSO & TELECONNECTIONS
Chair: Gene Rasmusson (5 min. topic introduction)

2:05-2:35 Pacific v.s. Indian Ocean warming: how does it matter for global and regional climate change?
Joseph Barsugli, S. Shin and P. Sardeshmukh

2:35-3:05 Significant Change of Extratropical Natural Variability Associated with Tropical ENSO Anomaly

Wilbur Chen

3:05-3:35 Time-frequency variations of the U. S. Great Plains precipitation and its relationship with tropical central-eastern Pacific SST
Song Yang, X. Ding and D. Zheng

3:35-4:00 BREAK

4:00-4:30 The Pacific meridional mode: diagnostics and impacts
Dan Vimont and J. Chiang

4:30-5:00 Cluster analysis of tropical cyclone tracks and ENSO
Suzana Camargo, A. Robertson, S. Gaffney and P. Smyth

6:00-8:00 Applied Research Center (ARC) Council Meeting

Friday, October 22, 2004

SESSION 9: ENSO & TELECONNECTIONS (cont'd)
Chair: Chet Ropelewski

8:00-8:30 The strength of El Nino and the spatial extent of tropical drought – a remarkably robust relationship
Brad Lyon

8:30-9:00 An analysis of variability in atmospheric response to SSTs in an atmospheric general circulation model
Arun Kumar, Q. Zhang, P. Peng and B. Jha

9:00-9:30 Sensitivity of U. S. precipitation and temperature to tropical Indian, Pacific and Atlantic ocean SST anomalies throughout the year
Prashant Sardeshmukh, J. Barsugli and S. Shin

9:30-10:00 Understanding the sensitivity of North American Drought in the present and past climate to the tropical Pacific SSTs
Sang-IK Shin, R. Webb, P. Sardeshmukh, R. Oglesby and J. Barsugli

10:00-10:30 BREAK

SESSION 9: ENSO & TELECONNECTIONS (cont'd)
Chair: Dan Vimont

10:30-11:00 Challenges in prediction of summer monsoon rainfall: inadequacy of the tier-2 strategy
Bin Wang, X. Fu, Q. Ding, I. Kang, K. Jin, J. Shukla and F. Doblas-Reyes

11:00-11:30 Spring onset in the Northern Hemisphere: a role for the stratosphere?
Rob Black, B. McDaniel and W. Robinson

11:30-12:00 Simulations of extreme cold-air outbreaks
Steve Vavrus, J. Walsh, D. Portis and W. Chapman

---------- END OF WORKSHOP ----------

POSTER PRESENTATIONS

Monday October 18, 2004

9:05-10:30 POSTER SESSION 1: RECENT CLIMATE ANOMALIES, CLIMATE FORECAST SYSTEM & PREDICTABILITY

P1.1 Cool summer over Japan in 2003 -- from the viewpoint of summer following the 2002/03 El-Nino event
Hirokazu Endo

P1.2 Recent West African hydrologic anomalies in the NCEP CFS
Wassila M. Thiaw and Kingtse C. Mo

P1.3 NCEP CFS retrospective forecast data: description and availability in the NCEP climate server
Catherine Thiaw

P1.4 The European heatwave of 2003: a modeling study using the NSIPP-1 AGCM.
P. Pegion, S. Schubert, R. Koster, M.Suarez, R. Reichle and P. Liu

P1.5 The SST bias in the tropical Pacific in NCEP coupled forecast system model (CFS03)
Wanqiu Wang

P1.6 Evaluation of the downstream weather impacts associated with atmospheric blocking over the Northeast Pacific in the CFS and AMIP model simulations
Marco L. Carrera, Natalie Gaggini, and R. Wayne Higgins

P1.7 The best analyzed air-sea fluxes for seasonal forecasting
Glenn White, Wan-Qui Wang, Suranjana Saha, Sudhir Nadiga and Hua-Lu Pan

P1.8 Simulation of the tropical air-sea coupled systems in the new NCEP coupled forecast system
Jiande Wang, Sudhir Nadiga and David Behringer

P1.9 The historic Colorado front range snowstorm of March 17-19, 2003
Klaus Wolter, Thomas Schlatter and Nolan Doesken

P1.10 Evaluation of ENSO prediction and its impact on US surface climate using NCEP/CFS retrospective seasonal forecasts
Augustin Vintzileos and Jae-Kyung E. Schemm

P1.11 Application of the University of Wisconsin Nonhydrostatic Modeling System (UWNMS) to large scale interaction between Northern and Southern hemispheres
Marek Rogal, Matthew H. Hitchman, Marcus L. Buker, and J. Gregory

P1.12 Attempts in reducing velocity errors in the Global Ocean Data Assimilation System at NCEP
Yan Xue and David Behringer

P1.13 Predictability of three dynamical components of tropical SSTs
Cecile Penland and Ludmila Matrosova

P1.14 Assessing seasonal ocean-atmosphere interaction in the midlatitude North Pacific
Dong Eun Lee and Zhengyu Liu

P1.15

P1.16 Improvements of the Geostationary Operational Environmental Satellites GOES)R series for climate applications
Timothy J. Schmit, W. P. Menzel, James J. Gurka, Elaine M. Prins, Mathew M. Gunshor, Jun Li

P1.17 Breeding and SLAF ensemble schemes for the NCEP-CFS03 coupled ocean-atmosphere model
Malaquías Peña and Zoltan Toth

P1.18 Northern Hemispheric storm tracks in the NOAA/NCEP GFS and CFS Models: climatology, interannual variability, and extreme events
Timothy Eichler and Wayne Higgins

P1.19 The recent "recovery" of the rains in the West African Sahel.
Sharon Nicholson

P1.20 Analysis of subseasonal to decadal variability in a coupled general circulation model
S. Miller, R. Nieto-Ferriera, M. Rienecker, S. Schubert, M. Suarez, P. Pegion

P1.21 An update on the North American Monsoon Experiment (NAME)
Wayne Higgins, Marco Carrera, Tim Eichler and the NAME SWG

P1.22 The 2003/04 Stratospheric Warming Event: Its Evolution and Impact upon the Troposphere
Craig Long, M. Gelman, S. Zhou, A. J. Miller, W. Higgins, H.K. Kim

P1.23 Review of the 2003 Antarctic Ozone Hole and an up-to-date look at the 2004 Ozone Hole
Craig Long, S. Zhou, R. Nagatani, A. J. Miller

Tuesday October 19, 2004

9:05-10:30 POSTER SESSION 2: SATELLITE REGIONAL & LONG-TERM CLIMATE STUDIES

P2.1 About changes of cloudiness vertical macrostructure before, during and after falling precipitation.
Irina Chernykh and Oleg Alduchov

P2.2 An analysis of the National Climatic Data Center thirty-year temperature normals
Larry Brown

P2.3 Spread of boundary conditions on regional seasonal forecast
Hann-Ming Henry Juang and Jun Wang

P2.4 Variations of climate parameters in the middle atmosphere from HALOE
Ellis Remsberg

P2.5 Towards an optimal merging of satellite data sets
Jörg Schulz and Ralf Lindau

P2.6 Preliminary results from the new AVHRR Pathfinder Atmospheres Extended (PATMOS-x)
Andrew Heidinger and, Michael Pavolonis

P2.7 Regional climate modeling - big brother experiment
Deborah Herceg, Adam Sobel, Liqiang Sun and Steve Zebiak

P2.8 GOES/POES satellite intercalibration: essential for climate studies.
Mathew M. Gunshor, Timothy J. Schmit, W. P. Menzel and David Tobin

P2.9 Rainfall variability in the tropical Atlantic region
Guojun Gu, Robert F. Adler and Andrew J. Negri

P2.10 Global climate response induced by aerosol radiative forcing
M. K Kim, K. M. Lau, K. M. Kim, Y. C. Sud, G. K. Walker, and M. Chin

P2.11 Cloud-aerosol inteaction over Southeast Asia and its impact on the onset of the east Asian summer monsoon
Kyu-Myong Kim, William K.-M. Lau, N. Christina Hsu, Si-Chee Tsay

P2.12 The variations of upper-air temperature in the last decade of the 20th century – beginning of 21st century.
Alexander Sterin

P2.13 Analyses of precipitation variability during 1979-present: a perspective from satellites
John Janowiak, Pingping Xie, Robert Joyce, Mingyue Chen, Yelena Yarosh

P2.14 Changing Arctic climate and cloud feedback effect
Xuanji Wang and Jeffrey R. Key

P2.15 GOES cloud products and cloud studies
Anthony J. Schreiner, Timothy J. Schmit, W. Paul Menzel, Jun Li, James A. Jung, Steven A. Ackerman, Wayne F. Feltz and Robert M. Aune

P2.16 Preliminary trends in cloudiness from the new AVHRR pathfinder atmospheres extended (PATMOS-x) data set
Michael J. Pavolonis and Andrew K. Heidinger

P2.17 Correlations between monthly mean values of cloudiness vertical macrostructure parameters and precipitation amount
Oleg A. Alduchov and Irina V. Chernykh

P2.18 Global warming experiments for IPCC AR4 by MRI-CGCM2.3
Takao Uchiyama

P2.19 New climate divisions for monitoring and predicting climate in the U.S. - A progress report
Klaus Wolter and Russell Bigley

P2.20 Response of marine ecosystem changes to interannual-to-decadal climate variations in the northern oceans
Arne Winguth

P2.21 Is global warming injecting randomness into the climate system?
A. A. Tsonis

P2.22 Observed trends in South American precipitation
Brant Liebmann, Carolina S. Vera, Leila M.V. Carvalho, Ines A. Camilloni, Martin P. Hoerling, Dave Allured and Vicente R. Barros

P2.23 An analysis of weighting schemes using climate indices for seasonal volume forecasts produced from the ensemble streamflow prediction system of the National Weather Service
Kevin Werner, David Brandon, Martyn Clark and Subhrendu Gangopadhyay

P2.24 Prediction of summertime temperatures over the western United States
Eric Alfaro, Alexander Gershunov and Dan Cayan

P2.25 An analysis of snow simulations in a regional climate model with an advanced snow ccheme
Jiming Jin and Norman L. Miller

P2.26 Diurnal cycle of California climate from regional downscaling
Hideki Kanamaru and Masao Kanamitsu

P2.27 Potential Roles of Hyperspectral IR Sensors for Climate Change Detection
Hsiao-hua Burke and Bill Snow

Wednesday October 20, 2004

9:05-10:30 POSTER SESSION 3: NAME 04, SOIL MOISTURE & REGIONAL

P3.1 Climatology and variability of the North American monsoon system in NCEP GFS GCM simulations
Jae-Kyung Schemm, Kyong-Hwan Seo, Hyun-Kyung Kim and Kingtse Mo

P3.2 NAMAP: An assessment of regional and global model simulations of the North American monsoon
Hyun-kyung Kim, David Gutzler, and Wayne Higgins

P3.3 AGCM simulations of warm season diurnal cycle over the continental United States and northern Mexico
M.-I. Lee, S. Schubert, M. Suarez, J. Bacmeister, P. Pegion, I. Held, J. Ploshay, N.-C. Lau, B. Tian, A. Kumar, H.-K. Kim, J. Schemm, K. Mo and W. Higgins

P3.4 Hydroclimatology of the North American monsoon region in northwest Mexico
David Gochis and L. Brito Castillo

P3.5 Evaluating the performance of satellite rainfall estimates using data from NAME program
Ismail Yucel, Robert J. Kuligowski and David J. Gochis

P3.6 Diurnal cycle of cloud and precipitation associated with the North American Monsoon System: A case study for 2003
Pingping Xie, Yelena Yarosh, Mingyue Chen, Robert J. Joyce, John J. Janowiak, and Phillip A. Arkin

P3.7 Impact of Tropical Easterly Waves on the North American Monsoon
Jennifer L. Adams and David J. Stensrud

P3.8 Atmospheric moisture transport as evaluated in the CDAS 2, **G**DAS, operational EDAS, regional reanalysis during NAME 04
Kingtse C. Mo, Marco Carrera and R. Wayne Higgins

P3.9 Comparing changes in upper atmospheric wind flow to the decrease in wintertime precipitation in the northern rockies since 1977
Gene Petrescu

P3.10 Large-scale aspects of the hydrological cycle as seen from the NCEP Regional Reanalysis and Forecast Products
Marco L. Carrera, Kingtse C. Mo, Muthuvel Chelliah, R. Wayne Higgins, and Wesely Ebisuzaki

P3.11 The relative impact of initial land states on warm season precipitation simulation over North America with Eta regional climate model
Rongqian Yang and Kenneth Mitchell

P3.12 Land memory study using CPC's new global soil moisture dataset from 1948-P\present
Yun Fan, Huug M. van den Dool and Peitao Peng

P3.13 Impact of initial soil wetness on seasonal climate prediction
Liqiang Sun

P3.14 Soil moisture impacts on seasonal forecast predictability
Laurel DeHaan, Masao Kanamitsu, Sarah Lu, John Roads,

P3.15 Severity-area-duration analysis of 20th century drought in the conterminous U. S.
Elizabeth A. Clark, Konstantinos M. Andreadis, Andrew W. Wood, and Dennis P. Lettenmaier

P3.16 Impact of land initialization on coupled seasonal forecasts during Summer 2004
N. Kurkowski, R. Reichle, S. Miller, J. Gottschalck, R. Koster, P. Liu , J. Meng , P. Pegion, M. Rodell, S. Schubert, M. Suarez

P3.17 A comparison of the soil moisture from the North American regional reanalysis and the NCEP/DOE reanalyses
Wesley Ebisuzaki, Cheng-Hsuan Lu

P3.18 Seasonal and interannual variations of precipitation over Atlantic Ocean and its adjacent land areas
Pingping Xie, Mingyue Chen, Evgeney Yarosh, John Janowiak, and Phillip A. Arkin

P3.19 Gravity satellite data and calculated soil moisture: A mutual validation
Huug van den Dool, Yun Fan, John Wahr and Sean Swenson

P3.20 Intraseasonal rainfall variability within the North American monsoon
AV Douglas and PJ Englehart

P3.21 Relationships between GOC moisture surges and tropical cyclones in the eastern Pacific and Atlantic basins
Wayne Higgins and Wei Shi

P3.22 Potential predictability of U.S. summer climate with "perfect" soil moisture
Fanglin Yang, Arun Kumar and K. -M. Lau

P3.23 Seasonal climate prediction for the UK health sector
Glenn McGregor

P3.24 Have variations in convection and circulation in the tropics played a role in the variability of the Antarctic Ozone?
Leila M. Vespoli de Carvalho and Charles Jones

Thursday October 21, 2004

9:35-11:00 POSTER SESSION 4: ENSO, TELECONNECTIONS, FORECASTS

P4.1 The onset and period of the Madden-Julian Oscillation and alternating tendency in its intensity
Kyong-Hwan Seo and Jae-Kyung E. Schemm

P4.2 Stratosphere-troposphere exchange and the QBO
Amihan Huesmann and Matthew Hitchman

P4.3 The Atlantic basin hurricane database re-analysis for the decades of the 1910s, 1920s and 1930s
Christopher W. Landsea, J. Berkeley, W. Bredemeyer, R. Ellis, S. Feuer, D. Glenn, J. Sims, D. Thomas and L. Woolcock

P4.4 Predictability studies of the intraseasonal oscillation in the ECHAM GCM

Stefan Liess and Duane E. Waliser

P4.5 An experimental national long-range hydrologic prediction system (NLHPS)
John Schaake, Pedro Restrepo and Shuzheng Cong

P4.6 Validation of the ECPC coupled model
Elena Yulaeva, Masao Kanamitsu, and John Roads

P4.7 Seasonal forecast skill comparison of cluster mean, ensemble mean and EOF mode patterns
Tosiyuki Nakaegawa and Masao Kanamitsu

P4.8 The effects of el nino/ southern oscillation on Utah's climate
Brian McInerney

P4.9 Value of climate forecasts with marginal to modest skill to real users
Robert E Livezey and Barbara E. Mayes

P4.10 The variability of Indian Ocean SST and its climate impacts
Soo-Hyun Yoo, Song Yang, and Chang-Hoi Ho

P4.11 A Markov model approach to incorporate influences of the Madden-Julian Oscillation on ENSO: Part 1. predicting intraseasonal variability
Yan Xue and Kyong-Hwan Seo

P4.12 OGCM study of the interannual variability of Western Hemisphere warm pool
S.-K. Lee, D. B. Enfield and C. Wang

P4.13 Boreal summertime teleconnection linking interannual climate variations over North America and Asia
Hailan Wang and William K.-M. Lau

P4.14 Seasonal surface air temperature and precipitation in the FSU climate model coupled to the CLM2
D. W. Shin, S. Cocke, T. E. LaRow, and James J. O'Brien

P4.15 A tool for improving natural resource management under climate uncertainty: customized forecast evaluations using the internet
Holly C. Hartmann, Bisher Imam, Ellen Lay, David Lamb, and Soroosh Sorooshian

P4.16 Verification of CPC's 2004 heat index forecasts
Kenneth Pelman

P4.17 Extended-range analog ensemble forecasts
Ed O'Lenic and Scott Handel

P4.18 Directional transition mechanism of the Rossby wave propagation
Sung-Dae Kang, Su-Hee Park, Won-Tae Kown

P4.19 Global Teleconnection: A New Framework for Climate Prediction
Julian X.L. Wang

P4.20 Circumglobal teleconnection in the Northern Hemisphere summer
Qinghua Ding and Bin Wang

P4.21 On the sources of water vapor over the Indian subcontinent
Man-Li C. Wu, S. D. Schubert, S. M. J. Suarez, M. Bosilvich, J. D. Chern and D. E. Waliser

P4.22 The statistics of weather in climate based on observations and models
C F. Ropelewski and M. A. Bell

P4.23 United States landfalling hurricane probability webpage
Philip J. Klotzbach and William M. Gray

P4.24 Interannual and interdecadal rainfall variations in the Hawaiian Islands
Pao-Shin Chu and Wendy Chen

P4.25 Forecast skill and economic value of APCN multi-model ensemble prediction: where does the skill of multi-model ensemble prediction come from?
June-Yi Lee and William K.-M. Lau

P4.26 Boundary and initial flow induced variability over Pacific-North America in CCC-AGCM simulations
Amir Shabbar and Kaz Higuchi

P4.27 Maintenance of Arctic and sub-Arctic atmospheric circulation observations and CCSM3 simulations
Eric DeWeaver

P4.28 Atmospheric response to North Pacific SST: the role of ocean-atmosphere coupling
Zhengyu Liu and Lixin Wu

P4.29 Subseasonal Predictability of the Coupled Tropical Indo-Pacific
Matthew Newman, Prashant D. Sardeshmukh, and Cecile Penland